CLAIMS

1. A semiconductor device comprising:

a semiconductor chip, which produces heat when operated;

a pair of heat conducting plates for conducting heat from opposite surfaces of the chip, wherein the plates face each other;

a pair of insulating sheets, which are compressively deformable, adhered to the heat conducting plates; and

a resin molding covering the chip, the plates, and the sheets such that the sheets are exposed from the resin molding.

2. The semiconductor device of claim 1, wherein the heat conductivity of the insulating sheets is greater than that of the resin molding.

3. The semiconductor device of claim 2, wherein the insulating sheets are made of silicone rubber.

4. The semiconductor device of claim 1, wherein the material of one of the insulating sheets is different from the material of the other insulating sheet.

5. The semiconductor device of claim 1, wherein the thickness of one of the insulating sheets is different from the thickness of the other insulating sheet.

6. The semiconductor device of claim 1, wherein the surface

characteristics of one of the insulating sheets is different from the surface characteristics of the other insulating sheet.

7. The semiconductor device of claim 1, wherein the insulating sheets are adhered to the heat sinks using a coating resin applied to the surfaces of the heat sinks.

8. The semiconductor device of claim 7, wherein the coating resin is polyamide resin.

9. The semiconductor device of claim 1, wherein the chip forms part of a stack, and the stack includes the plates, and opposite sides of the chip are soldered to members of the stack.

10. A method for manufacturing a semiconductor device that includes a semiconductor chip comprising:

locating the chip between two heat conducting plates;

attaching an insulating sheet to an outer surface of each of the plates;

filling a space around the chip and the plates and between the sheets with resin by molding.

11. The method of claim 10 further comprising applying a resin coating material on the chip and the plates after locating the chip between the plates.

12. The method of claim 11, wherein the sheets are adhered to

the plates with the resin coating material.

13. The method of claim 11, wherein the resin coating material is applied by immersing the chip and the plates in a container of liquid that includes the resin coating material.

14. The method of claim 11, wherein the resin coating material is applied by dripping or spraying a liquid that includes the resin coating material on the chip and the plates.

15. The method of claim 11, wherein the resin coating material is polyamide resin.

16. A method for manufacturing a semiconductor device that includes a semiconductor chip comprising:

soldering opposite sides of the chip to members of a stack, which includes two heat conducting plates, such that the chip is located between the plates;

attaching a compressible insulating sheet to an outer surface of each of the plates;

filling a space around the chip and the plates and between the sheets with resin by molding.